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Fabian Proj #997113
26 Feb 65
RFD

CONTACT DUPLICATING & RESEAU PRINTER → 997093

AND

HIGH RESOLUTION STEP & REPEAT PRINTER → 997113

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SIXTH MONTHLY LETTER REPORT

January 10, 1964

Period: December 1, 1964 to January 1, 1965

STAT

NGA Review
Complete

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1.0 CONTACT DUPLICATING AND RESEAU PRINTER

1.1 Purpose

The overall objective of the current contract is the design, fabrication, test, and delivery in fifteen months of a photographic Step and Repeat Contact Duplicating & Reseau Printer. Prime design goals are high speed automatic operation, variable format capability, and high resolution with minimum film distortion or damage. The deliverable equipment will be suitable for operational use. The Printer will accommodate films of 70mm to 9-1/2" width with frame lengths up to 30", and will offer operation in the Reseau mode and selective mode as options.

1.2 Activity of This Report Period

The Design Plan, lay-out drawings, and Industrial Design renderings were submitted on 11 December 1964. While awaiting formal approval, further development of the breadboard unit continues in the areas of film transport, image sensing, light source and automatic exposure control.

Preliminary photographic tests have been initiated on the breadboard unit to evaluate automatic timing and cycling of film transports, frame sensing, contact pressure means, and exposure source. Primary effort is being devoted to light sources, collimation devices, and exposure control. Parallel testing is being performed at [redacted] Reseau samples are being evaluated in both breadboard devices to demonstrate required objectives and to resolve specifications for Reseau grid manufacture.

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Progress in other areas is continuing toward a final design configuration, and it is not anticipated at this time that the resolution of the light source and exposure control system will delay scheduled progress.

A recent meeting with [redacted] produced some tentative decisions regarding final machine configuration, control panel design and human factors engineering. A cardboard mock-up of the Printer is now being fabricated to demonstrate general machine operation, loading and accessibility. The photoelectric circuitry breadboard being fabricated for localized automatic exposure control has been successfully demonstrated in partial component assemblies and is now being combined into an integrated circuit. Evaluation of sensor types and sampling area is proceeding on the basis of electronic functions and photographic characteristics. Final design and selection of components is dependent upon the final choice of exposure source and configuration.

STAT

Studies by [redacted] on Environmental Control and Film Sensitometry have been completed and are included in the Design Plan. Further consultations are planned to help develop the final design during the fabrication phase of the program.

1.3 Plans for Next Report Period

Photographic tests will be continued at [redacted] STAT

STAT [redacted] in an effort to fix the configuration and selection of components for the exposure system.

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STAT [redacted] will be intensified in order to obtain maximum benefit from the parallel investigations and experimental programs being conducted.

Lay-out and design effort on the Pre-View and Punch Station is forecast now that functional requirements have been resolved. An industrial design study has been initiated.

Specifications for the Reseau grid are expected to be finalized and released for quotation during the coming period in view of the extended lead-time required for manufacture.

1.4 Problems

Concentrated efforts are being applied to resolution of the light source and exposure control problem, and, while final configuration is not yet resolved, the overall program schedule has not been affected.

In order to avoid possible delivery delays and, possibly, additional costs, STAT [redacted] requires immediate approval of the Design Plan.

1.5 Documentation

No further changes or clarifications to the Printer specification were documented in the past report period. A comprehensive list of specification changes has been included in the Design Plan recently submitted for approval.

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2.0 HIGH RESOLUTION STEP AND REPEAT PRINTER

2.1 Purpose

The purpose of this effort is to design, fabricate, test and deliver in twenty months a high-precision Step and Repeat Photographic Contact Printer. This Printer will be capable of producing photographic contact prints of the highest possible quality, resolution and acutance from roll films of width varying from 70 mm to 9-1/2" and in pre-selected frame lengths from 2-1/4" up to a maximum of 30".

This program will include a six-month Feasibility Study followed by a Breadboard Phase. Following design approval a prototype Printer will be produced in accordance with the Design Plan.

2.2 Activity of This Report Period

The major activity during this reporting period was the preparation of the Feasibility Report in accordance with the requirements of the contract. The report presents the characteristics and components recommended to meet the performance specifications set forth in the purchase description, and includes the proposed methods for accomplishing the desired objectives. Included, in addition, are revisions to the performance specifications based on agreements with the Technical Monitor.

During this reporting period additional breadboards were initiated. The major breadboarding will be in the following areas:

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1. Exposure Control and Light Source
2. Film Drive and Transport
3. Film Gate
4. Code Reader
5. Electronic Packaging

It is intended that each breadboard will be carried only as far as necessary to demonstrate feasibility of the concepts outlined in the Feasibility Study.

A Breadboard Schedule and Budget is being prepared for each Breadboard Task, and Task Leaders have been assigned area responsibilities. The following is a description of the progress made in each breadboard area to date:

1. Exposure Control and Light Source

Two types of photo sensors have been ordered and received, and test circuits have been designed. A preliminary design has been initiated for a log amplifier and some of the components have been ordered and received. Lamp modulator circuitry is in the planning stage and a block diagram has been prepared. Lamp vendors have been contacted, with favorable results to date. A preliminary lamp specification has been prepared for the exposing and sensing lamps.

2. Film Drive and Transport

The layout drawing of the transport is progressing. Spool motors, capstan motor, spool brake and the capstan brake have been specified and ordered. It has been decided to drive the capstan with a DC

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motor instead of an AC synchronous motor because of RFI problems caused by AC switching.

It is expected that the layout will be completed in the coming month and that fabrication will be initiated.

3. Film Gate

Preliminary design activity has been initiated.

4. Code Reader

Circuit design and component selection are in progress. A reader test target specification has been prepared. Test photocells have been ordered [redacted] STAT

STAT [redacted] Spectral response tests and response time tests are being planned.

5. Electronic Packaging

Techniques for packaging microcircuit modules are being investigated. Sample microcircuits have been obtained and optimum module concept design is being studied.

2.3 Plans for Next Report Period

Breadboard design and component selection will be accelerated. Fabrication will be initiated in some areas and layout drawings will be started in the Gate and Code Reader Breadboards.

The Feasibility Report will be delivered approximately on schedule and breadboard plans will be discussed in detail at the next technical review session.

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2.4 Problems

An early meeting with the procuring technical personnel is required to discuss the details of film coding and exposure control. Certain documents and data previously requested by [ ] to be STAT furnished by the technical monitor, have not been forthcoming. In that the contents of the requested documents may have an important bearing on this contract, their absence is now considered to constitute a problem. A description of the data and documents follows:

List of spool sizes and formats to be furnished by the technical monitor.

Document procurement to be furnished by the technical monitor.

AD-438 418 Density Discrimination for Printer Utilization Study.

AD-439 600L Test and Evaluate the Kalvar 70 MM and and 5 Inch Roll to Roll Contact Printer/Processor (EN-85).

AD-430 315 Test and Evaluation of [ ] STAT

STAT [ ] 70 MM Film Processor - January 7, 1964.

AD-426 996 A Continuous Tone Diazo Reproduction System - September 3, 1963.

AD-405 915 Printer Contact Photographic EN 39 - December 1962.

AD-293 047 Test and Evaluation of USAF 70 MM Roll Film Printer EN 31 - August 1962.

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2.5 Documentation

There was no new documentation this report period.

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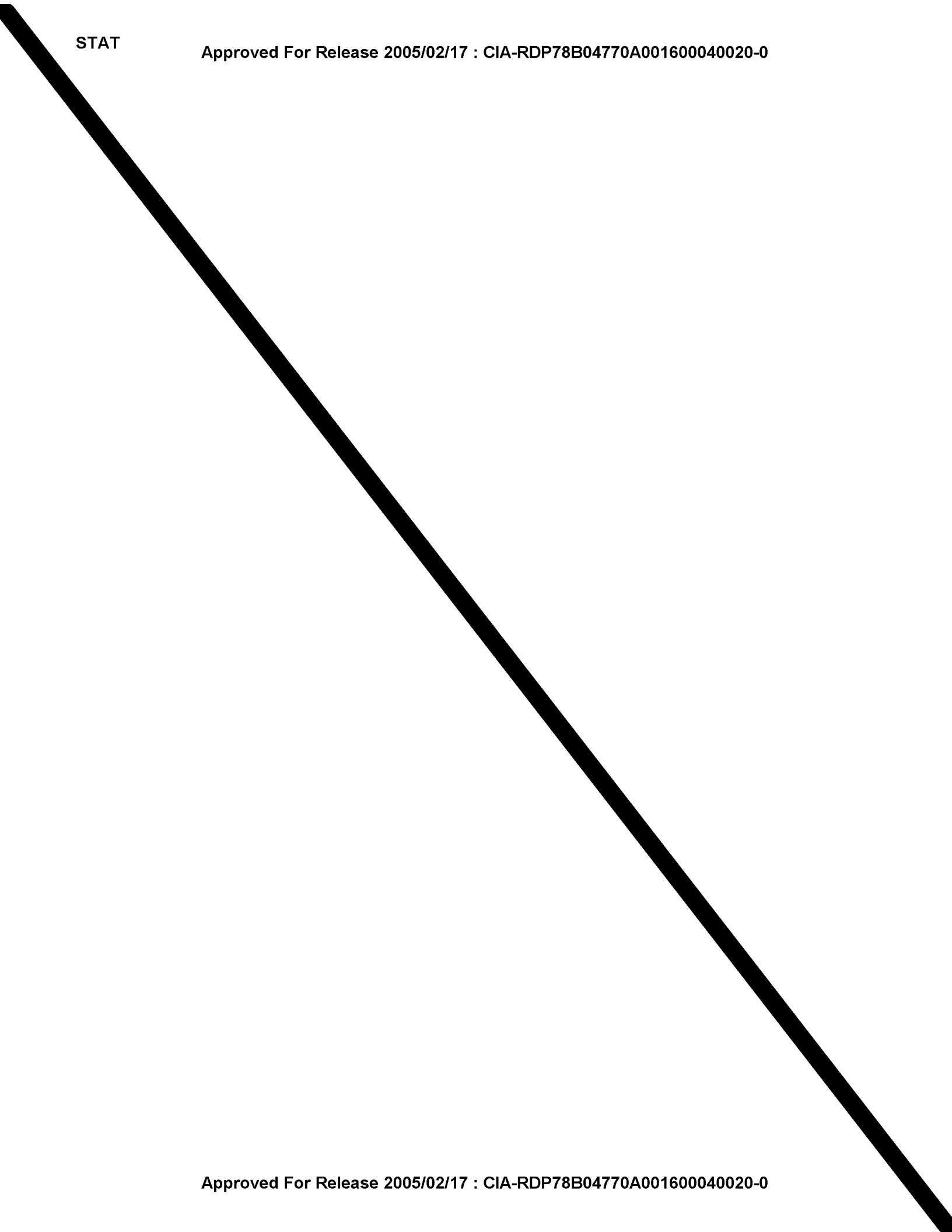

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